HealtheNet Pathology - overview

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A de-identified patient case study

Peter, 68 years old, presents to ED suffering from shortness of breath and blood in his bowel movements.
Haemoglobin § (g/L) Showing from 03-Jul-2016 to 22-Mar-2017

§ Units or Reference Range differs
## Full blood count

- **Reported Date**: 20-Jul-2017 14:32
- **Ordering Provider**: TEST SPECIALIST
- **Final Status**

### Tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Ref. Range (Units)</th>
<th>Abnormality</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemoglobin</td>
<td>* 65</td>
<td>115-165 (g/L)</td>
<td>Below low normal</td>
<td>Final</td>
</tr>
<tr>
<td>White cell count</td>
<td>5.96</td>
<td>3.50-11.00 (10^9/L)</td>
<td>Normal</td>
<td>Final</td>
</tr>
<tr>
<td>Platelet count</td>
<td>233</td>
<td>150-450 (10^9/L)</td>
<td>Normal</td>
<td>Final</td>
</tr>
<tr>
<td>Red cell count</td>
<td>4.09</td>
<td>3.80-5.60 (10^12/L)</td>
<td>Normal</td>
<td>Final</td>
</tr>
<tr>
<td>Haematocrit</td>
<td>0.415</td>
<td>0.37-0.47 (L/L)</td>
<td>Normal</td>
<td>Final</td>
</tr>
<tr>
<td>Mean cell volume</td>
<td>* 100.5</td>
<td>80-100 (fL)</td>
<td>Above high normal</td>
<td>Final</td>
</tr>
<tr>
<td>Mean cell haemoglobin</td>
<td>33.0</td>
<td>26.5-33.0 (pg)</td>
<td>Normal</td>
<td>Final</td>
</tr>
<tr>
<td>Mean cell haemoglobin concentration</td>
<td>325</td>
<td>310-360 (pg/L)</td>
<td>Normal</td>
<td>Final</td>
</tr>
<tr>
<td>Red cell distribution width</td>
<td>* 53.6</td>
<td>38.0-48.0 (fL)</td>
<td>Above high normal</td>
<td>Final</td>
</tr>
<tr>
<td>Neutrophils</td>
<td>67.3</td>
<td>(%)</td>
<td></td>
<td>Final</td>
</tr>
<tr>
<td>Lymphocytes</td>
<td>23.0</td>
<td>(%)</td>
<td></td>
<td>Final</td>
</tr>
<tr>
<td>Monocytes</td>
<td>6.4</td>
<td>(%)</td>
<td></td>
<td>Final</td>
</tr>
<tr>
<td>Eosinophils</td>
<td>3.0</td>
<td>(%)</td>
<td></td>
<td>Final</td>
</tr>
<tr>
<td>Basophils</td>
<td>0.3</td>
<td>(%)</td>
<td></td>
<td>Final</td>
</tr>
<tr>
<td>Quality Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Design Considerations

Integration Services

LHD

PAS
RIS
eMR
ICU
LIS
Various
LHD Applications

EPR
RIS
CR
State Applications

EIR

NSW Pathology
Death Review

IM
Pillar Applications

Integrated Care Partners
Medicare HI Service
My Health Record
GP Brokers Argus/ MO/ HealthLink

LHD Applications
State Applications
Pillar Applications
NSW Health Pathology


- 60 + Laboratories
- 200+ Collections Services
- 4000+ FTE’s
- ~60 Million Tests / Year
- Largest Centralised Managed PoCT Service in Southern Hemisphere
Clinical Stream Governance

Anatomical Pathology, Microbiology Chemical Pathology, Immunology, Haematology, Transfusion, Genomics, Point of Care Testing, Pre-analytical

Services

Pathology Testing, Forensic Services, Blood Product Management, Pathologists and Physician services, Multi-Disciplinary Team Meetings, Teaching Training and Research plus Translational Research, Environmental Services, Clinical Trials, Public Health, Sexual Health Clinic Support, Bone Marrow Transfusion Services, Organ Tissue Donation Services, Perinatal Autopsy and Mortuary Services, Infection Control and Surveillance, Antimicrobial Resistance Stewardship, Collections, Andrology, Haemophilia Support, Drug and Therapeutic Management, Bio-Banking, QC Program Development, Animal Services and Professional Obligations.
Accreditation

Pathology is a quality clinical service that must pass accreditation to operate. National Australian Testing Authority (NATA) audits laboratories based on National Pathology Australia Advisory Council (NPAAC) requirements.

Test Catalogue

Pathology performs orderable tests from a catalogue of > 2000 and growing. Orderable tests contain many more reportable results. Combined NSW Health Pathology orderable and reportable test codes > 100,000. Top 50 tests contribute to ~90% of activity.

Australia is not currently using a standard test catalogue. NSW Health Pathology is normalising its test catalogue to the RCPA Standards for Pathology Informatics In Australia.
RCPA Standards for Pathology Informatics In Australia (SPIA)

**SPIA (APUTS) Standards for Pathology Informatics in Australia** – contains the latest of the standards for requesting and reporting of pathology.

SPIA requesting terminology reference set is published on the Australian Digital Health Agency’s NCTS website, as the preferred requesting term is mapped to a SNOMED terminology code.

SPIA reporting terminology reference sets uses LOINC codes for the questions and SNOMED codes for the answers. The current list of LOINC codes for each discipline is available on the RCPA website [http://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/APUTS-Downloads](http://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/APUTS-Downloads), and are also available on Agency’s NCTS website. The terminology reference sets for structured pathology reporting of cancer contain LOINC codes from the question and SNOMED codes for the answers, and due to SNOMED copyright, these reference sets are only published on the Agency’s NCTS website.
RCPA Standards for Pathology Informatics In Australia (SPIA) - Workgroups

1. Standards development and publishing (wg1) - standardised HL7v2 messaging with ADHA and HL7.au

2. Safety in pathology reporting (wg2) - chemical tests combination safety; best practice in the use of clinical information systems; harmonised reference ranges

3. Request and report terminology (wg3) - expand terms in APUTS reference sets

4. Request modelling (wg4) - genetic test requesting

5. Report modelling (wg5) - standards for safe atomic reporting to registries; partnering with Cancer Institute NSW

6. Informatics quality assurance (wg6) - quality assurance protocol that can be used by accrediting bodies to assist with compliance, by partnering with RCPA QAP
RCPA Standards for Pathology Informatics In Australia (SPIA) – LOINC Parameters

LOINC prescribes six parameters. For each code:

• Component (analyte) – Sodium
• Property Measured – Substance concentration
• Timing – A point in time
• System – Serum (or plasma)
• Scale – Quantitative (mmol/L)
• Method used – ISE (but this is only used where different methods give clinically significant different results)

UCUM (Unified Code for Units of Measure) - unambiguous electronic communication of quantities together with their units. Electronic communication focus. Administered by the Regenstrief Institute http://unitsofmeasure.org/
NSW Health Pathology Integration Process

Collaborative process required - eHealth HealtheNet and eRIC teams, network LIS teams, network scientists and pathologists, Chief Scientist and Chief Pathologist, Clinical Stream engagement, ADHA and the RCPA. Pathology workshops, Project steering committee.

Key resource is a coding co-ordinator that understands pathology tests, pathology LIS setups, standards and HL7 messaging.

Laboratory Information Systems are compared and align to RCPA SPIA standards and reference sets. This may involve LIS setup modifications.

New SNOMED / LOINC codes are submitted as a request to the RCPA. Information required: clinical indications, package insert (or in-house procedure if applicable), reference interval, de-identified sample reports for both negative and positive results.

All NSW Health pathology results will be stored in the Clinical Repository. Phased approach based on the capacity to standardise codes.
All NSW Health Pathology results messaged from Laboratory Information Systems will be stored in the HealtheNet Clinical Repository.

Clinical Portal can display results in:
1. Cumulative View
2. Flow Sheet View
3. Graph View
4. Single Results
Questions?